

WHAT IS CLAIMED IS:

1. An isolated or recombinant polypeptide:

A) that:

- 5 a) specifically binds polyclonal antibodies generated
against a 12 consecutive amino acid segment of
SEQ ID NO: 2; and
b) comprises at least one sequence selected from the
following group (see SEQ ID NO: 2):

10 LeuCysPheArgMetLysAsp; ValLeuTyrLeuHisAsn;
GlnLeuLeuAlaGly; IleSerValValProAsn;
SerProValIleLeuGlyVal; GlnCysLeuSerCysGlyThr;
ProIleLeuLysLeuGlu; PheTyrArgArgAspMetGly;
LeuThrSerSerPheGluSer; PheLeuCysThrSer;
15 GlnProValArgLeuThr; PheTyrPheGlnGln;
ArgAlaLeuAspAlaSerLeu; and GlyLeuHisAlaGluLysVal;

B) that:

- 20 a) specifically binds polyclonal antibodies generated
against a 12 consecutive amino acid segment of
SEQ ID NO: 6; and

b) comprises at least one sequence selected from the
following group (see SEQ ID NO: 6):

25 SerLeuArgHisValGlnAsp; ValTrpIleLeuGlnAsn;
IleLeuThrAlaVal; IleThrLeuLeuProCys;
AspProThrTyrMetGlyVal; SerCysLeuPheCysThrLys;
ProValLeuGlnLeuGly; PheTyrHisLysLysSerGly;
ThrThrSerThrPheGluSer; PheIleAlaValCys;
CysProLeuIleLeuThr; PheGluMetIleVal;
GlnAspLeuSer; ValProArgLysGluGlnThrVal;
30 SerLysGlySerCysPro; ArgAlaAlaSer;
ProCysGlnTyrLeuAspThrLeuGlu; and SerGlyThrThr; or

C) that:

- 35 a) specifically binds polyclonal antibodies generated
against a 12 consecutive amino acid segment of
SEQ ID NO: 13 or 15; and
b) comprises at least one sequence selected from the
following group (see SEQ ID NO: 13 or 15):

ITGTIND; VWTLQG; NLVAV; VAVITC; DPIYLG; MCLYCEK;
PTLQLK; FYRAKTG; RTSTLES; FIASS; QPIILT; FELNI;
SMCK; NDLN; VPR(R/S)TSVT; VPRSDSVT; TCKYPEALE;
TGRT; SKRDQP; or SKGDQP.

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2. The polypeptide of Claim 1:

- a) wherein said polypeptide comprises a plurality of said sequences selected from said group in section b) of part 1A;
- b) wherein said polypeptide comprises a plurality of said sequences selected from said group in section b) of part 1B;
- c) wherein said polypeptide comprises a plurality of said sequences selected from said group in section b) of part 1C; or
- d) which specifically binds to polyclonal antibodies generated against an immunogen selected from the group consisting of:
 - i) the polypeptide of SEQ ID NO: 2;
 - ii) the polypeptide of SEQ ID NO: 6;
 - iii) the polypeptide of SEQ ID NO: 13; and.
 - iv) the polypeptide of SEQ ID NO: 15.

3. The polypeptide of:

- A) Claim 1A, wherein said 12 consecutive amino acid segment is selected from (see SEQ ID NO: 2):
LeuCysPheArgMetLysAspSerAlaLeuLysValLeuTyrLeuHisAsn-Asn;
IleSerValValProAsnArgAlaLeuAspAlaSerLeuSerProValIle-LeuGlyValGln;
SerProValIleLeuGlyValGlnGlyGlySerGlnCys;
ProIleLeuLysLeuGluProValAsnIleMetGluLeu;
ThrSerSerPheGluSerAlaAlaTyrProGlyTrpPhe;
PheLeuCysThrSerProGluAlaAspGlnProVal;
ThrGlnIleProGluAspProAlaTrpAspAlaProIle; or
ThrSerSerPheGluSerAlaAlaTyrProGlyTrpPhe;

- B) Claim 1B, wherein said 12 consecutive amino acid segment is selected from (see SEQ ID NO: 6):
ArgAlaAlaSerProSerLeuArgHisValGlnAspLeu;
SerSerArgValTrpIleLeuGlnAsnAsnIleLeu;
5 ProValThrIleThrLeuLeuProCysGlnTyrLeu;
GlyValGlnArgProMetSerCysLeuPheCysThr;
PheCysThrLysAspGlyGluGlnProValLeuGlnLeu;
ThrSerThrPheGluSerAlaAlaPheProGlyTrpPhe; and
CysSerLysGlySerCysProLeuIleLeuThrGln; or
- 10 C) claim 1C, wherein said 12 consecutive amino acid segment is selected from (see SEQ ID NO: 13 or 15):
SMCKPITGTINDL;
NQQVWTLQGQNL;
PVTAVAVITCKYP;
15 GIQNPEMCLYCE;
YCEKVGEQPTLQL;
TSTLESVAFPDWF;
SKGDQPIILTSE;
SKRDQPIILTSE; and
20 GKSYNTAFELNIND.

3. The polypeptide of Claim 2, wherein said polypeptide:

- i) is a mature protein;
- 25 ii) lacks a post-translational modification;
- iii) is from a rodent, including a mouse;
- iv) is from a primate, including a human;
- v) is a natural allelic variant of IL-1 δ or IL-1 ϵ ;
- vi) has a length at least 30 amino acids;
- 30 vii) exhibits at least two non-overlapping epitopes that are specific for a rodent IL-1 δ ;
- viii) exhibits a sequence identity over a length of at least about 20 amino acids to SEQ ID NO: 2;
- 35 ix) exhibits at least two non-overlapping epitopes which are specific for a rodent or primate IL-1 ϵ ;
- x) exhibits a sequence identity over a length of at least about 20 amino acids to SEQ ID NO: 6 or 15;

- xi) is glycosylated;
- xii) has a molecular weight of at least 10 kD with natural glycosylation;
- 5 xiii) is a synthetic polypeptide;
- xiv) is attached to a solid substrate;
- xv) is conjugated to another chemical moiety;
- xvi) is a 5-fold or less substitution from natural sequence; or
- 10 xvii) is a deletion or insertion variant from a natural sequence.

4. A soluble polypeptide comprising:
- a) a sterile polypeptide of Claim 2;
- b) said sterile polypeptide of Claim 2 and a carrier, wherein said carrier is:
- 15 i) an aqueous compound, including water, saline, and/or buffer, and/or
- ii) formulated for oral, rectal, nasal, topical, or parenteral administration.

- 20 5. A fusion protein having a polypeptide sequence of Claim 2 and further comprising:
- a) a mature protein of Claim 2;
- b) a detection or purification tag, including a FLAG, His6, or Ig sequence; or
- 25 c) sequence of another cytokine or chemokine.

- 30 6. A kit comprising a polypeptide of Claim 2, and:
- a) a compartment comprising said protein or polypeptide; and/or
- b) instructions for use or disposal of reagents in said kit.

- 35 7. A binding compound comprising an antigen binding site from an antibody, which specifically binds to a mature polypeptide from:
- a) SEQ ID NO: 2;

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- b) SEQ ID NO: 6;
- c) SEQ ID NO: 13; or
- d) SEQ ID NO: 15.

- 5 8. The binding compound of Claim 7, wherein:
- a) said binding compound is an Fv, Fab, or Fab2 fragment;
 - b) said binding compound is conjugated to another chemical moiety; or
 - 10 c) said antibody:
 - i) is raised against a polypeptide comprising a 12 consecutive amino acid segment of SEQ ID NO: 2, 6, 13, or 15;
 - ii) is raised against a mature IL-1 ϵ ;
 - 15 iii) is raised to a purified rodent IL-1 δ or rodent or primate IL-1 ϵ ;
 - iv) is immunoselected;
 - v) is a polyclonal antibody;
 - vi) binds to a denatured IL-1 δ or IL-1 ϵ ;
 - 20 vii) exhibits a Kd to antigen of at least 30 μ M;
 - viii) is attached to a solid substrate, including a bead or plastic membrane;
 - ix) is in a sterile composition; or
 - x) is detectably labeled, including a radioactive or fluorescent label.

- 25 9. A kit comprising said binding compound of Claim 7, and:
- a) a compartment comprising said binding compound; and/or
 - 30 b) instructions for use or disposal of reagents in said kit.

10. 10. A composition comprising:
- a) a sterile binding compound of Claim 7, or
 - 35 b) said binding compound of Claim 7 and a carrier, wherein said carrier is:

- i) an aqueous compound, including water, saline, and/or buffer; and/or
- ii) formulated for oral, rectal, nasal, topical, or parenteral administration.

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11. An isolated or recombinant nucleic acid encoding a polypeptide of Claim 2, wherein:

- a) said polypeptide of Claim 2 is IL-1 δ or IL-1 ϵ from a mammal; or
- b) said nucleic acid:
 - i) comprises the mature coding sequence of SEQ ID NO: 1, 3, 12, or 14;
 - ii) encodes an antigenic peptide sequence of SEQ ID NO: 2, or SEQ ID NO: 6, 13, or 15;
 - iii) encodes a plurality of antigenic peptide sequences of SEQ ID NO: 2, or SEQ ID NO: 6, 13, or 15;
 - iv) exhibits identity to a natural cDNA encoding said segment;
 - v) is an expression vector;
 - vi) further comprises an origin of replication;
 - vii) is from a natural source;
 - viii) comprises a detectable label;
 - ix) comprises synthetic nucleotide sequence;
 - x) is less than 6 kb, preferably less than 3 kb;
 - xi) is from a rodent or primate;
 - xii) comprises a natural full length coding sequence;
 - xiii) is a hybridization probe for a gene encoding said IL-1 δ or IL-1 ϵ ;
 - xiv) is a PCR primer, PCR product, or mutagenesis primer; or
 - xv) encodes an IL-1 δ or an IL-1 ϵ protein.

35 12. A cell, transformed with said nucleic acid of
Claim 10.

13. The cell of Claim 12, wherein said cell is:

 - a prokaryotic cell;
 - a eukaryotic cell;
 - a bacterial cell;
 - 5 a yeast cell;
 - an insect cell;
 - f) a mammalian cell;
 - g) a murine cell;
 - h) a primate cell; or
 - i) a human cell.

14. A kit comprising said nucleic acid of Claim 11, and:

 - a compartment comprising said nucleic acid;
 - b) a compartment further comprising a mammalian IL-1 δ or IL-1 ϵ protein or polypeptide; and/or
 - c) instructions for use or disposal of reagents in said kit.

15. 15. An isolated or recombinant nucleic acid that

 - a) hybridizes under wash conditions of 40° C and less than 1M salt to SEQ ID NO: 1;
 - b) hybridizes under wash conditions of 40° C and less than 1 M salt to SEQ ID NO: 3, 5, 12 or 14.

16. The nucleic acid of Claim 15, wherein:

 - a) said wash condition is at 50° C and/or 500 mM salt; and
 - b) exhibits identity over at least 20 nucleotides to SEQ ID NO: 1, 3, 5, 12, or 14.

17. The nucleic acid of Claim 16, wherein:

 - a) a wash condition is at 65° C and/or 150 mM salt; or
 - b) exhibits identity over at least 50 nucleotides to SEQ ID NO: 1, 3, 5, 12, or 14.

18. A method of modulating a cell involved in an inflammatory response comprising contacting said cell with an agonist or antagonist of a mammalian IL-1 δ or IL-1 ϵ polypeptide of Claims 1.

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19. The method of Claim 18, wherein:

a) said contacting is in combination with an agonist or antagonist of IL-1 α , IL-1RA, IL-1 β , IL-1 γ , IL-2, and/or IL-12;

10 b) said contacting is with an antagonist, including binding composition comprising an antibody binding site which specifically binds an IL-1 δ or IL-1 ϵ ; or

c) said modulating is regulation of IFN- γ production.

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20. SubA3 A method of:

A) making an antiserum comprising an antibody of Claim 7, comprising immunizing a mammal with an immunogenic amount of:

a) a rodent IL-1 δ polypeptide;
b) a peptide sequence comprising a 12 consecutive amino acid segment of SEQ ID NO: 2;

c) a rodent or primate IL-1 ϵ polypeptide; or
d) a peptide sequence comprising a 12 consecutive amino acid segment of SEQ ID NO: 6, 13, or 15;

25 thereby causing said antiserum to be produced; or producing an antigen:antibody complex, comprising contacting:

30 a) a rodent IL-1 δ protein or peptide with an antibody of Claim 7; or
b) a rodent or primate IL-1 ϵ protein or peptide with an antibody of Claim 7;

35 thereby allowing said complex to form.

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